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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/737,418	12/14/2000	James R. Huston	75115.0176	8804

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EXAMINER

KUMAR, SRILAKSHMI K

ART UNIT	PAPER NUMBER
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2675

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DATE MAILED: 06/02/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/737,418

Applicant(s)

HUSTON ET AL.

Examiner

Srilakshmi K. Kumar

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 February 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10, 12-21 and 23-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10, 12-21, and 23-25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

The following office action is in response to Amendment B, filed February 24, 2004. Claims 1-10, 12-21 and 23-25 are pending.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-7, 12-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Akiyama et al (US 5,977,940).

As to independent claims 1 and 12, Akiyama et al disclose a display device and a method for driving a display comprising; storing a voltage value in an analog memory associated with each pixel of a display, each of the pixels having a first and a second optical state; Although Akiyama et al do not state where each of the pixels have a first and second optical state, it would have been obvious to one of ordinary skill in the art that all pixels have a first and second optical state such as "on" or "white" and "off" or "black" states.

wherein each of the pixels has a comparator associated therewith (col. 9, lines 37-46, 60-67); comparing a reference voltage having values that change in time to the voltage values stored in each of the analog memories associated with each of the pixels (col. 10, lines 1-22, 36-65); changing the optical state of each of the pixels when the respective voltage values match the

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reference voltage (col. 10, lines 1-22, 36-65). Akiyama et al disclose in col. 10, lines 1-22, 36-65, and in Figs. 2a-e the comparison of the reference voltage, which changes in time, with those of the voltage values stored in the memory. It would have been obvious to one of ordinary skill in the art where the optical state of each of the pixels would be changed depending upon the voltage values in the memories as is required for driving a display. This is clearly shown by Akiyama et al in Figs. 2a-e and in col. 10, lines 1-22 and 36-65.

As to dependent claims 2 and 13, limitations of claims 1 and 12, and further comprising, wherein the display is an active matrix panel display (col. 9, lines 28-37).

As to dependent claims 3 and 14, limitations of claims 1 and 12, and further comprising, the step of applying illumination while the reference voltage changes values in time (col. 9, lines 28-37, col. 10, lines 1-22, 36-65).

As to dependent claims 4 and 15, limitations of claim 3 and 14, and further comprising, wherein the reference voltage is changed as a function of time for causing each pixel to change optical state at a desired time (col. 13, lines 14-41).

As to dependent claims 5 and 16, limitations of claim 1 and 12, and further comprising, wherein the optical states of groups of the pixels are changed, and further comprising the step of changing the states of the groups of the pixels in multiple phased cycles (col. 13, line 14-col. 14, line 23).

As to dependent claims 6 and 17, limitations of claim 5 and 16, and further comprising, wherein the groups are interspersed on the display to avoid flicker at low update rates (col. 13, line 14-col. 14, line 23).

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As to dependent claims 7 and 18, limitations of claims 1 and 12, and further comprising, wherein the pixel provides illumination (col. 9, lines 28-37).

3. Claims 8-10 and 19-21 rejected under 35 U.S.C. 103(a) as being unpatentable over Akiyama et al in view of Huang et al (US 5,965,907).

As to dependent claims 8 and 19, limitations of claims 7 and 18, and further comprising, wherein the display is an organic light emitting diode display (OLED). Akiyama et al does not disclose where the display is an organic light emitting diode display. Huang et al disclose a OLED device within a liquid crystal display as shown in the abstract. It would have been obvious to one of ordinary skill in the art to incorporate the OLED device of Huang et al into that of Akiyama as the addition of the OLEDs for use as LCD illumination device allows for field sequential color and is a more reliable light source as shown in col. 2, lines 9-41.

As to dependent claim 9 and 20, limitations of claims 8 and 19, see limitations of claims 5 and 16.

As to dependent claims 10 and 21, limitations of claim 9 and 20, see limitations of claims 6 and 17.

4. Claims 23-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Akiyama et al (US 5,977,940) further in view of Nakao (US 6,437,716).

As to independent claim 23, limitations of claims 1 and 12, and further comprising, wherein each of the pixels includes a level shifter for changing a lower voltage to a higher voltage for output to a pixel electrode. Akiyama et al do not disclose a level shifter. Nakao disclose a level shifter in col. 2, line 64-col. 3, line 12. It would have been obvious to one of ordinary skill in the art to incorporate the level shifter of Nakao into that of Akiyama et al as the

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level shifter converts the data into an analog voltage, which is then outputted as the gray scale display voltage from an LCD drive voltage output terminal to the source signal lines of the LCD elements by an output circuit. Thus, with the incorporation of the level shifter, the number of levels of the reference voltages becomes the number of levels of gray that can be provided for display.

As to dependent claims 24 and 25, limitations of claims 1 and 12, and further comprising, wherein the voltage value in at least a portion of the analog memories is adjusted for providing gamma correction. Akiyama et al do not disclose wherein the voltage value in at least a portion of the analog memories is adjusted for providing gamma correction. Nakao discloses in col. 7, lines 31-53, wherein the gamma correction is provided. It would have been obvious to one of ordinary skill in the art to incorporate the gamma correction of Nakao into that of Akiyama et al as the gamma correction would provide a more natural gray scale display (col. 1, lines 12-20).

Response to Arguments

5. Applicant's arguments filed February 23, 2004 have been fully considered but they are not persuasive.

In regards to applicant's arguments for independent claims 1, 12 and 23, Akiyama et al disclose a display device and a method for driving a display comprising; storing a voltage value in an analog memory associated with each pixel of a display, each of the pixels having a first and a second optical state; Although Akiyama et al do not state where each of the pixels have a first and second optical state, it would have been obvious to one of ordinary skill in the art that all pixels have a first and second optical state such as "on" or "white" and "off" or "black" states.

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wherein each of the pixels has a comparator associated therewith (col. 9, lines 37-46, 60-67); comparing a reference voltage having values that change in time to the voltage values stored in each of the analog memories associated with each of the pixels (col. 10, lines 1-22, 36-65); changing the optical state of each of the pixels when the respective voltage values match the reference voltage (col. 10, lines 1-22, 36-65). Akiyama et al disclose in col. 10, lines 1-22, 36-65, and in Figs. 2a-e the comparison of the reference voltage, which changes in time, with those of the voltage values stored in the memory. It would have been obvious to one of ordinary skill in the art where the optical state of each of the pixels would be changed depending upon the voltage values in the memories as is required for driving a display. This is clearly shown by Akiyama et al in Figs. 2a-e and in col. 10, lines 1-22 and 36-65.

Conclusion

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Srilakshmi K. Kumar whose telephone number is 703 306 5575. The examiner can normally be reached on 8:00 am to 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, xxxx xxxx can be reached on xxx xxx xxxx. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Srilakshmi K. Kumar
Examiner
Art Unit 2675

SKK
May 30, 2004


DENNIS-DOON CHOW
PRIMARY EXAMINER